



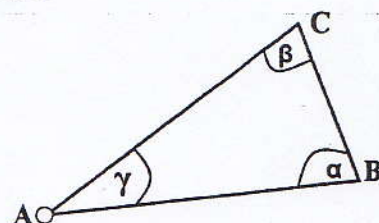
ASSIGNMENT NO. (1)

1. The coordinates in meters for triangulation stations B and C are:

Station	X (m)	Y(m)
B	6369.287	5890.836
C	6300.259	6082.183

The observed angles are:

β	60°	12'	28"
α	86°	10'	30"



Determine X, and Y coordinates of point A using the base solution of solving the intersection problem

- 2- Two stations A and B are 846 m apart . From Theodolite stations P and Q on opposite sides of AB the following angles were observed :

APQ	61° 12'	BQP	53° 28'
QPB	44° 11'	PQA	41° 29'

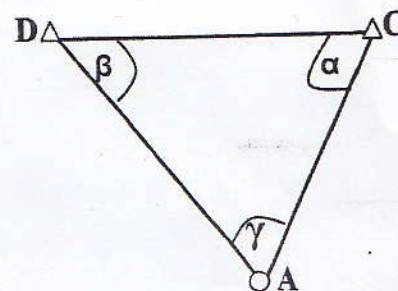
Calculate the length of PQ.

- 3- Point A is intersected from stations C and D having the following coordinates

Station	X (m)	Y(m)
C	1300.259	1082.183
D	1047.954	1048.344

The observed angles are:

$\angle DCA$	47°	30'	08"
$\angle ADC$	87°	31'	21"



Calculate the coordinates of point A using the two methods of solution.

- 4- The coordinates for stations C and D are as follows

Station	X(m)	Y(m)
C	323484.123	124231.305
D	323888.059	124832.170

Horizontal angles measured with a 01" Theodolite from stations C and D to station B are angle BCD = 65° 37' 24.8" and angle CDB = 80° 49' 41.9". The azimuth of line CD is 30°.

- (i) Compute the coordinates for station B by intersection using the base solution.
(ii) Compute coordinates for station B by intersection using the azimuth calculated for line DB and CB.

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ASSIGNMENT NO. (2)

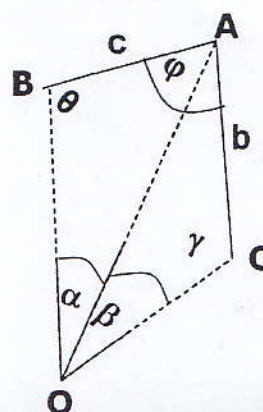
1-A, B and C are three shore stations on a coast line, and P is a point on the other side .
 AB = 400 m, BC = 320 m, angles $ABC = 105^\circ 30'$, $APB = 42^\circ$ and $CPB = 48^\circ$. A and C are respectively east and west of BP, B and P are respectively north and south of AC. Calculate the distances AP, BP and CP.

2- Given the following data for a three point resection

Point	X(m)	Y(m)
B	1000.00	2000.00
A	1667.50	2000.00
C	2773.76	1421.24

The observed angles are:

$\angle \alpha$	19°	$7'$	$43''$
$\angle \beta$	36°	$6'$	$18''$
$\angle \phi$	150°	$23'$	$32''$



Calculate the coordinates of O from point A, B, and C.

3-Horizontal angles were observed from unknown station Campbell to three stations of known position having the following coordinates:

Point	X(m)	Y(m)
A	6984.819	4424.243
B	5078.670	9693.183
C	4933.356	3008.605

The measured angles are:

Station	From	To	Angle
Campbell	A	B	$44^\circ 49' 1.4''$
	B	C	$25^\circ 50' 52.4''$

Calculate the coordinates of station Campbell by resection.

With my best wishes
 DR. Mona Saad



ASSIGNMENT NO. (3)

1. Determine the level of point B, where the level of point A = 300 m and the horizontal distance between A & B is 50 m, the zenith angle is 115° , the height of instrument is 1.5 m, the height of the target above B is 1.2 m.

2. From station A stations B & C were observed and the observations were as tabulated. Calculate the elevations of B & C, where the height of instrument is 1.46 m and the height of the rod = 1 m, and the elevation of station A is 265.18 m.

Station	Target	Vertical angle	Distance (m)
A	B	$+ 1^\circ 20' 15''$	125.18
	C	$- 2^\circ 30' 17''$	77.36

3. Determine the level of point B, where the level of point A = 200 m and the distance between A & B at elevation H_A is 2.5 km, the true vertical angle at A is 15° , the observe vertical angle at A is $16^\circ 20' 15''$, the radius of the earth at mid latitude of A & B is 6378.55 km, and the arc distance between A & B at elevation H_A is 2.55 km. Also calculate the refractive index and the vertical angle subtended by the height of the signal at B. "Assume any missing data"

With my best wishes
DR. Mona Saad



ASSIGNMENT NO. (4)

1. Station A & B in a major triangulation are 29 kilometres apart, the geodetic azimuth of AB at A is $70^{\circ} 25' 00''$. The latitude of A is $30^{\circ} 10' 00''$ & the longitude of A is $32^{\circ} 35' 00''$ Compute the latitude, longitude and azimuth at point B. the reference surface is WGA84 ellipsoid.
2. The latitude of A is $30^{\circ} 59' 22''$ & the longitude of A is $30^{\circ} 21' 33''$. Also, the latitude of B is $29^{\circ} 53' 22''$ & the longitude of B is $31^{\circ} 14' 11''$. Compute the distance between A&B, the geodetic azimuth of AB at A and the geodetic azimuth of BA at B. The reference surface is Helmert 1906 ellipsoid.

With my best wishes
DR. Mona Saad